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**TIDAL CURRENT  
CHARTS  
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BOSTON HARBOR**

**U. S. DEPARTMENT OF COMMERCE**  
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**COAST AND GEODETIC SURVEY**  
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For sale only by the Coast and Geodetic Survey, Washington, D. C.

Price 25 cents



TIDAL CURRENT CHARTS, BOSTON HARBOR

These current charts show the direction and velocity of the tidal current for each hour of the current at Boston Harbor (Deer Island Light). They present a comprehensive view of the tidal current movement for the harbor as a whole and also supply a means of readily determining the direction and velocity of the current at various localities throughout the bay.

The charts, which may be used for any year, are referred to the times of the slack waters at Boston Harbor (Deer Island Light) which on the charts are designated as "Beginning of flood" and "Beginning of ebb." Daily predictions for these times of slack water are included in the Atlantic Coast Current Tables published annually by the Coast and Geodetic Survey. For the sake of convenience the charts are also referred to the times of high and low water at Boston (Commonwealth Pier), daily predictions for which are included in the Atlantic Coast Tide Tables published annually by the Coast and Geodetic Survey. As the charts are designed for use in connection with the predicted currents at Deer Island Light the data derived through reference to tides at Boston should be considered as approximate.

The directions of the current are indicated by red arrows, and the velocities by red figures. The velocities, which are expressed in knots, are for the current at the time of spring tides—that is, near the time of new and full moon—hence the velocities shown are the strongest ordinarily encountered.

*Nontidal currents.*—These charts depict the flow of the tidal currents under normal weather conditions. Strong winds and freshets, however, bring about nontidal currents which may modify considerably the velocities and directions shown on the charts.

*Use of charts.*—Twelve charts are given, 6 being referred to "Beginning of flood" (slack before flood) and 6 to "Beginning of ebb" (slack before ebb). The chart to be used for any specific time is determined by obtaining the difference between the given time and the time of the nearest preceding slack water for Boston Harbor (Deer Island Light) as given in the Atlantic Coast Current Tables. The chart with the legend that agrees most nearly with this difference is the one to be used for the specific time desired.

Having selected the proper chart, the directions and the spring velocities of the current throughout the harbor are readily obtained by the red arrows and figures on that chart.

The tidal current varies from day to day principally in accordance with the phase, parallax, and declination of the moon, and to obtain the velocities for the particular day the velocities indicated on the charts should be modified as follows: Obtain from the current tables the predicted velocity of the next "Maximum flood" or "Maximum ebb" that follows the slack to which the chart is referred. With this predicted velocity enter the following table and obtain the corresponding correction factor. The velocities of the current for the particular day are then determined by multiplying the velocities indicated on the chart by this factor.

Factors for correcting velocities

Maximum flood		Maximum ebb	
Predicted velocity (knots)	Factor to apply to velocities on charts	Predicted velocity (knots)	Factor to apply to velocities on charts
1.0-1.1, multiply by-----	0.5	0.8-0.9, multiply by-----	0.5
1.2-1.3, multiply by-----	0.6	1.0-1.1, multiply by-----	0.6
1.4-1.5, multiply by-----	0.7	1.2-1.3, multiply by-----	0.7
1.6-1.7, multiply by-----	0.8	1.4, multiply by-----	0.8
1.8-1.9, multiply by-----	0.9	1.5-1.6, multiply by-----	0.9
2.0-2.2, multiply by-----	1.0	1.7-1.8, multiply by-----	1.0
2.3-2.4, multiply by-----	1.1	1.9, multiply by-----	1.1
2.5-2.6, multiply by-----	1.2	2.0-2.1, multiply by-----	1.2
		2.2-2.3, multiply by-----	1.3

*Example.*—Suppose that the direction and velocity of the current in Nantasket Gut is desired for 7 a. m., on a day when the predictions for Boston Harbor (Deer Island Light), as given in the Atlantic Coast Current Tables, are as follows:

Slack; flood begins (time)			Slack; ebb begins (time)		
Time		Velocity	Time		Velocity
H. m.	H. m.	Knots	H. m.	H. m.	Knots
5 19 a. m.	8 25 a. m.	1.7	11 11 a. m.	2 25 a. m.	1.8
5 25 p. m.	8 42 p. m.	1.8	11 24 p. m.	2 48 p. m.	1.5

The desired time of 7 a. m. is 1<sup>h</sup> 41<sup>m</sup> after the "Beginning of flood" at 5.19 a. m., this being the nearest preceding slack. The data desired will therefore be found on the chart designated "Two hours after beginning of flood at Deer Island Light." This chart indicates that the current at Nantasket Gut is flooding (setting southward). The number (2.4) shown in Nantasket Gut is the spring velocity of the current. To determine the velocity of the current for the particular day, this spring velocity is modified by means of the "Factors for correcting velocities" given in the table above. From the current tables the velocity of the current at 8.25 a. m. (time of maximum current following the slack used as reference) is found to be 1.7 knots. For a predicted maximum flood velocity of 1.7 knots the above table gives a factor of 0.8 to be applied to the velocities given on the chart. The approximate velocity of the current is then found to be 2.4 × 0.8 = 1.9 knots.

As the time 7 a. m. is somewhat less than two hours after the nearest preceding slack, which occurs at 5.19 a. m., more precise results may be obtained by interpolating between the data given on the two charts designated "One hour after beginning of flood at Deer Island Light" and "Two hours after beginning of flood at Deer Island Light." The chart for one hour after slack shows the current in Nantasket Gut to be flooding with a spring velocity of 1.8 knots, which when corrected by the factor 0.8 gives a velocity of 1.4 knots for the particular day. The chart for two hours after slack gave the current as flooding with a corrected velocity of 1.9 knots. Interpolating between these data for the time 1<sup>h</sup> 41<sup>m</sup> after slack, the current in Nantasket Gut at 7 a. m. on the given date is found to be flooding with a velocity of about 1.7 knots.

These tidal current charts were prepared by L. P. Disney, chief, section of tide predictions, under the direction of P. C. Whitney, chief, division of tides and currents.



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# TIDAL CURRENT CHART BOSTON HARBOR

Red arrows denote the direction and red figures the velocity of current at time indicated at bottom of chart.

Velocities are expressed in knots and are for the time of spring currents.

Predicted times of Beginning of Flood and Beginning of Ebb for Boston Harbor (Deer Island Light) for every day in the year are included in the Atlantic Coast Current Tables published annually by the U. S. Coast and Geodetic Survey.



BEGINNING OF FLOOD AT DEER ISLAND LIGHT  
( $\frac{1}{2}$  hour after low water at Boston)



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ONE HOUR AFTER BEGINNING OF FLOOD AT DEER ISLAND LIGHT  
(1½ hours after low water at Boston)



# TIDAL CURRENT CHART BOSTON HARBOR

Red arrows denote the direction and red figures the velocity of current at time indicated at bottom of chart.

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Predicted times of Beginning of Flood and Beginning of Ebb for Boston Harbor (Deer Island Light) for every day in the year are included in the Atlantic Coast Current Tables published annually by the U. S. Coast and Geodetic Survey.



TWO HOURS AFTER BEGINNING OF FLOOD AT DEER ISLAND LIGHT  
(2½ hours after low water at Boston)



# TIDAL CURRENT CHART BOSTON HARBOR

Red arrows denote the direction and red figures the velocity of current at time indicated at bottom of chart.

Velocities are expressed in knots and are for the time of spring currents.

Predicted times of Beginning of Flood and Beginning of Ebb for Boston Harbor (Deer Island Light) for every day in the year are included in the Atlantic Coast Current Tables published annually by the U. S. Coast and Geodetic Survey.



THREE HOURS AFTER BEGINNING OF FLOOD AT DEER ISLAND LIGHT  
(3½ hours after low water at Boston)



# TIDAL CURRENT CHART BOSTON HARBOR

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FOUR HOURS AFTER BEGINNING OF FLOOD AT DEER ISLAND LIGHT  
(4½ hours after low water at Boston)



# TIDAL CURRENT CHART

## BOSTON HARBOR

Red arrows denote the direction and red figures the velocity of current at time indicated at bottom of chart.

Velocities are expressed in knots and are for the time of spring currents.

Predicted times of Beginning of Flood and Beginning of Ebb for Boston Harbor (Deer Island Light) for every day in the year are included in the Atlantic Coast Current Tables published annually by the U. S. Coast and Geodetic Survey.

The chart displays the following locations and features:

- Cities and Towns:** REVERE, CHELSEA, BOSTON, CHARLESTOWN, DORCHESTER, QUINCY CENTER, NORTH WEYMOUTH, WEYMOUTH, HINGHAM, LYNN, NAHANT.
- Islands and Peninsulas:** BREEDS ISLAND, DEER ISLAND, SPECTACLE I., LONG ISLAND, THOMPSON I., MOON HD., HANGMAN I., HALFMOON I., GULL PT., ROCK I., GRAPE I., SLATE I., SHEEP I., NUT I., WHITE HD., PLANTERS HILL.
- Water Bodies:** BROAD SOUND, SOUTH CHAN, NORTH CHAN, HYPOCRITE CHAN, NANTASKET ROADS, HINGHAM BAY, QUINCY BAY, WYOMOUTH FORE RIVER, WYOMOUTH BACK R.
- Other Features:** EVERETT, MT. WASHINGTON, CRESCENT BEACH, BEACHMONT, OCEAN SPRAY, WINTHROP HEAD, APPLE I. FLATS, SNAKE I., COVINGTON I., GEORGES I., GALLOPS I., RAINSFORD I., PEDDOCK, BUNKER I., OTIS HILL, BAKER HILL, SQUAMPTON, NEPONSET, ASHMON, LOWER MILLS, MILTON HILLS, EAST MILTON, FORBES HILL, PRESIDENT HILL, WOLLASTON PARK, WOLLASTON HEIGHTS, MOUNT CLARENCE, MT. HOPE, QUINCY PT., QUINCY RIVER, TOWN RIVER BAY, POINT OF PINES, LITTLE NAHANT, SPOUTING HORN, EAST PT., EGGS ROCK, NAHANT BAY.

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BEGINNING OF EBB AT DEER ISLAND LIGHT  
(High water at Boston)



# TIDAL CURRENT CHART BOSTON HARBOR

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ONE HOUR AFTER BEGINNING OF EBB AT DEER ISLAND LIGHT  
(1 hour after high water at Boston)



# TIDAL CURRENT CHART

## BOSTON HARBOR

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*Predicted times of Beginning of Flood and Beginning of Ebb for Boston Harbor (Deer Island Light) for every day in the year are included in the Atlantic Coast Current Tables published annually by the U. S. Coast and Geodetic Survey*



TWO HOURS AFTER BEGINNING OF EBB AT DEER ISLAND LIGHT  
(2 hours after high water at Boston)



# TIDAL CURRENT CHART

## BOSTON HARBOR

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THREE HOURS AFTER BEGINNING OF EBB AT DEER ISLAND LIGHT  
(3 hours after high water at Boston)



# TIDAL CURRENT CHART BOSTON HARBOR

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FOUR HOURS AFTER BEGINNING OF EBB AT DEER ISLAND LIGHT  
(4 hours after high water at Boston)



# TIDAL CURRENT CHART

## BOSTON HARBOR

Red arrows denote the direction and red figures the velocity of current at time indicated at bottom of chart.

*Velocities are expressed in knots and are for the time of spring currents.*

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FIVE HOURS AFTER BEGINNING OF EBB AT DEER ISLAND LIGHT  
(5 hours after high water at Boston)







